

CLAIMS

1. A telescoping sub assembly adapted to be coupled between a drill head of a drilling rig and a drill rod, the telescoping sub assembly comprising:

a stator portion coupled to the drill rod and defining a drilling axis;

a rotor portion coupled to the drill head and moveable with respect to the stator portion between a retracted position corresponding to a first drilling depth, and an extended position corresponding to a second drilling depth; and

a locking assembly selectively engaged by at least one of the stator portion and the rotor portion to prohibit relative rotation of the rotor portion with respect to the stator portion when the rotor portion is in the retracted and extended positions.

2. The telescoping sub assembly of claim 1, further comprising a detent assembly including a first portion coupled to the stator portion and a second portion coupled to the rotor portion, the first and second portions engaging one another when the rotor portion is in the retracted and the extended positions.

3. The telescoping sub assembly of claim 2, wherein the first portion includes a pair of axially spaced detent couplings coupled to the stator portion, and the second portion includes a drive dog coupled to the rotor portion, and wherein when the rotor portion is in the retracted position the drive dog detently engages one of the detent couplings, and when the rotor portion is in the extended position, the drive dog detently engages the other of the detent couplings.

4. The telescoping sub assembly of claim 3, wherein each detent coupling defines a plurality of bores, and each bore receives an axially biased detent pin including an end extending axially beyond the detent coupling, and wherein the drive dog defines a plurality of detent recesses that receive the detent pins when the rotor portion is in the extended and retracted positions.

5. The telescoping sub assembly of claim 1, wherein the locking assembly includes a locking plate coupled to the stator and providing a first engagement portion and a second engagement portion axially spaced from the first engagement portion.

11. A method for drilling a hole in the ground with a drilling rig, the drilling rig including a tower and a drill head that is moveable along the tower, the method comprising:

providing a telescoping sub assembly that is adjustable between a retracted configuration and an extended configuration;

coupling one end of the telescoping sub to the drill head;

coupling an opposite end of the telescoping sub to a drill rod, thereby defining a drill string;

operating the drilling rig to drill to a first depth;

upon reaching the first depth, operating the drilling rig to adjust the telescoping sub assembly from the retracted configuration to the extended configuration, including rotating the rotor portion with respect to the stator portion to disengage the rotor portion from the stator portion; and

with the telescoping sub assembly in the extended configuration, operating the drilling rig to drill to a second depth that is greater than the first depth.

12. The method of claim 11, wherein operating the drilling rig to drill to a first depth includes rotating the drill string in a drilling direction, and moving the drill head along the tower to urge the drill string into the ground.

13. The method of claim 12, wherein rotating the drill string includes rotating the drill head.

14. The method of claim 12, wherein rotating the drill string includes rotating a kelly bushing that is rotatably fixed and axially moveable with respect to the drill string.

15. The method of claim 11, wherein coupling an opposite end of the telescoping sub to the drill rod includes coupling a stator portion of the telescoping sub to the drill rod.

16. The method of claim 15, wherein coupling one end of the telescoping sub to the drill head includes coupling a rotor portion of the telescoping sub to the drill head.